

MINING

Project Fact Sheet

ULTRA FINE MINERAL RECOVERY PILOT PLANT



NEW MINERAL PROCESSING TECHNOLOGY WILL REPROCESS COAL AND OTHER PREVIOUSLY MINED TAILINGS SAVING ENERGY AND INCREASING PRODUCTIVITY

Benefits

- Offers savings of 0.07 trillion Btu by 2010
- Increases the percentage of small particles recovered thus saving waste disposal costs and increasing productivity

Applications

This technology has widespread applications in the mining industry—more specifically in the physical separation/classification sector. It is also applicable to the steel industry to minimize adverse effects on the environment. Another application is the coal industry for recovery of fine coal particles.

Project Partners

NICE³ Program
Washington, DC

Graphic Engineering
Montague, CA

The modular technology of the ultra fine mineral recovery system, designed and manufactured by Graphic Engineering, will maintain capacity while also recovering a higher percentage of minus fifty-micron particles. This technology will also increase energy savings and revenues. Energy savings are increased by the improved production of commodity minerals. Creating saleable products and recovering valuable minerals from mining residues that would otherwise be disposed of as waste will only increase revenues. The technology will make reprocessing coal and other previously mined tailing ponds economically feasible and environmentally safe. The system uses a combination of laminar water flow, specially designed riffles, variable high frequency vibration and the linking of modules and units to get the highest recovery possible. Industrial-scale demonstrations will be performed using customer supplied samples or an appropriate substitute.

Proto-Type Ultra Fine Mineral Recovery Pilot Plant Unit



Shown above are two 6' x 12' UHF Concentrators linked creating a 1x2 array. This project will feature either a 2x3 or a 3x3 array of UHF tables creating one vibrating surface approximately 27' wide and 18' long. Units/modules are easily trucked and assembled at the process plant.



Project Description

Goal: To successfully scale-up the ultra-high frequency (UHF) technology to a production-scale commercial demonstration unit. Running the commercial unit will help prove the recovery rates of the smaller units on an industrial-scale and show the energy, environmental, and economic benefits. Commercialization activities will continue during the project period to work toward successful launching of the technology.

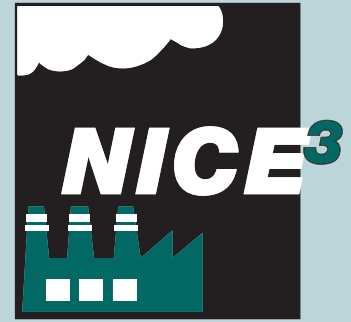
Progress and Milestones

The following are the main tasks to be performed:

- Pre-demonstration activities that include purchasing materials and equipment for the plant and preparing the pre-demonstration site. Finishing the working drawings, purchasing materials and hiring the contractor to perform site work are included in this task.
- Demonstration activities include acquiring and preparing test samples and conducting tests. The samples will be used for testing the UHF unit. Four different truckload sized samples will be used. Detailed measurements will be taken on a regular basis.
- The analysis of the UHF test data will determine various material feed sizes and how they affect capacity and recovery. The optimization of the UHF system involves making adjustments to the demonstration plant based on the analysis of the data.

Economics and Commercial Potential

Commercial introduction of the technology is expected by 2005. Annual energy savings by 2010 would be 0.07 trillion Btu. By 2020 the savings would grow to 0.57 trillion Btu.



NICE³ – National Industrial Competitiveness through Energy, Environment, and Economics: An innovative, cost-sharing program to promote energy efficiency, clean production, and economic competitiveness in industry. This grant program provides funding to state and industry partnerships for projects that demonstrate advances in energy efficiency and clean production technologies. Awardees receive a one-time grant of up to \$525,000. Grants fund up to 50% of total project cost for up to 3 years.

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December 2002